William Joseph Sagues
wjsagues@ncsu.edu | 321-438-2589 | https://www.sagueslab.com/
Updated October 2025

EDUCATION

PhD, Forest Biomaterials January 2018 - August 2020
North Carolina State University

MSc, Chemical Engineering August 2015 - December 2017
University of Florida

MSc, Agricultural & Biological Engineering August 2015 - December 2017
University of Florida

BSc, Agricultural & Biological Engineering August 2009 - May 2012
University of Florida

PROFESSIONAL APPOINTMENTS

Assistant Professor August 2020 - present
Principal Investigator of the Biocarbon Utilization & Sequestration (BUS) Laboratory
Biological & Agricultural Engineering
North Carolina State University

Co-Founder May 2023 – Jan 2025
Flip Biosystems, Inc.

Graduate Student Research (SCGSR) Fellow January 2020 - August 2020
Office of Science, U.S. Department of Energy
Host Site: National Renewable Energy Laboratory

Graduate Research Assistant January 2018 - August 2020
Department of Forest Biomaterials, North Carolina State University

Summer Scholar July 2019
Green Chemistry Summer School, American Chemical Society

Technology-to-Market Scholar May 2018 - August 2018
Advanced Research Projects Agency (ARPA-E), U.S. Department of Energy

Graduate Research Assistant August 2015 - December 2017
Department of Agricultural & Biological Engineering, University of Florida
Department of Chemical Engineering, University of Florida

Senior Bioprocess Engineer March 2014 - August 2015
Bioprocess Engineer May 2012 - March 2014
Stan Mayfield Biorefinery, Cellulosic Research & Demonstration Plant
Florida Center for Renewable Chemicals & Fuels, University of Florida
In Partnership with Georgia-Pacific LLC

GRANTS FUNDED – RESEARCH, DEVELOPMENT, & DEMONSTRATION
JANUARY 2021 – PRESENT (TOTAL: $22,526,185)

* indicates interinstitutional grant

Lead Principal Investigator (Total: $2,496,532)

1. *Innovating Synergistic Bioproducts from Leather Waste for Energy Storage & Energy Utilization*, Tapestry (industry project), 2025 – 2027, **$170,000**. **PI: W. J. Sagues**, Co-PI: Sunkyu Park
2. *Scaling Up Cotton Textile Waste Composting with CO_2 Utilization*, US Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA), 2025 – 2027, **$300,000. PI: W. J. Sagues**, Co-PIs: Richard Venditti & Alex Woodley
3. **A National Assessment of Carbon Removal via the US Cotton Industry,* Cotton Inc., 2025, **$125,000**. **PI: W. J. Sagues** Co-PI: Matthew Langholtz, ORNL
4. *A Feasibility Study of Atmospheric Carbon Removal via Burial of Cotton Waste Biomaterials,* Cotton Inc., 2024 – 2025, **$100,000**. PI: **W. J. Sagues**, Co-PI: Richard Venditti
5. *Anaerobic Digestion of Industrial Organic Residues*, Burnham RNG, 2023-2025, $76,810. **PI: W. J. Sagues**
6. *Bioprocessing Research Support,* Burnham, 2024, **$100,000**. **PI: W. J. Sagues**
7. *Conversion of Cotton Textile Waste to Biochar and Compost,* Cotton Incorporated, 2023, **$75,000**. **PI: W. J. Sagues**
8. KEITS Climate Leaders Program, Kenan Institute of Engineering, Technology, & Science, 2023 and 2024, **$10,000 PI: W. J. Sagues**
9. Goodnight Early Career Innovator Funds. 2022 – 2025. $22,000 per year for research **($66,000** total). **PI: W. J. Sagues**
10. *Carbon Mineralization via Rock Quarry Fines*, Carolina SunRock, 2022, **$25,004**. **PI: W. J. Sagues**, Co-PI: A. Woodley
11. *Electrifying Bioproducts via C1 Fermentation*, USDA, 2022-2023, Hatch Multi-State Grant, **$5,000**. **PI: W. J. Sagues**
12. *Electrifying Animal Feed: Leveraging Microbial Communities in Formicine Ants to Produce Single Cell Protein via Assimilation of CO2-Derived Formic Acid*, Research Innovation Seed Funding, North Carolina State University, 2022-2023, **$25,000**. **PI: W. J. Sagues**, Co-PIs: Elsa Youngsteadt, Amy Grunden, Sung Woo Kim, Kelly Zering, & Doug Call
13. *Electrifying Animal & Fish Feed: Leveraging Microbes in Food Waste Anaerobic Digesters to Produce Single Cell Protein via Assimilation of CO2-Derived Formic Acid*, NC Biotechnology Center, 2022-2023, **$12,477**. **PI: W. J. Sagues**, Co-PIs: Jay Cheng & Sung Woo Kim
14. *Bioprocess Development for Pulp Liquor Fermentation,* Rayonier Advanced Materials, 2022-2024, **$23,187**. **PI: W. J. Sagues**, Co-PIs: Hasan Jameel & Praveen Kolar
15. *Butanol & Nanocellulose from CRISPR-Edited Poplar*, NC Department of Agricultural & Consumer Services, 2021 – 2023, **$100,000**. **PI: W. J. Sagues**, Co-PIs: Wayne Yuan, Jack Wang, & Nathalie Lavoine
16. **Integrating Carbon Capture, Utilization, & Sequestration into Chemical Pulp Mills,* US Department of Energy's Advanced Manufacturing Office, Award Number: DE-EE0009413, 2021 – 2024, **$1,273,054**. **PI: W. J. Sagues**, Co-PIs: Fanxing Li, Rachel Cook, Sunkyu Park, & Hasan Jameel

Co-Principal Investigator (Total: $20,029,653, Sagues segment total: $1,464,556)

1. *Designing a Capstone Practicum to Educate the Next Generation of Food Animal Agricultural Professionals*, **$50,000**. PI: Joseph Donaldson. Co-PIs: **W. J. Sagues**, J. B. Ferreira, L. Joseph, S. Kelly, L. Li, J. Morgan, C. Nobles, C. Pickworth, S. Rahman, M. Castillo, J. Cheng, D. Duncan
2. *Enhanced Weathering for Carbon Sequestration in High Disturbance Organic Systems: An Evaluation on Climate Change Potential, Soil Fertility, and Agronomic Implications.* USDA,

2024 – 2029, **$999,979**. PI: Alex Woodley, Co-PIs: **W. J. Sagues**, Luciano Gatiboni, David Suchoff, and Binwanath Dari.

3. *Sustainable Ethylene via Chemical Looping – Oxidative Dehydrogenation*, US DOE, 2024 – 2026, **$249,998**. PI: F. Li. Co-PI: **W. J. Sagues**
4. *Advanced Separation and Processing Technologies for Enhanced Product Recovery and Improved Water Utilization, Cost Reduction, and Environmental Impact of an Integrated Lithium-Ion Battery Recycling System* , US DOE, 2023 – 2027. **$606,156**. PI: Ryan Melsert, American Battery Technology Company. Co-PIs: **W. J. Sagues**, Sunkyu Park.
5. **Sargassum and Wood Waste for Aviation Fuel and Graphite (SWAG)*, US DOE, 2022 – 2026, **$2,250,000**. PI: Sunkyu Park, Co-PIs: **W. J. Sagues**, Richard Venditti, Stephen Kelley, Margaret Blanchard.
6. **Biocatalyst Interactions with Gases (BIG) Collaboration*, Novo Nordisk Foundation, 2022 – 2027, **$7,000,000**. PI: Sonja Salmon, Co-PIs: **W. J. Sagues**, Amy Grunden, Doug Call, Igor Bolotnov, Nathan Crook, Fanxing Li, Flora Meilleur, & Yaroslava Yingling
7. *New Methods for Methane Pyrolysis*, Eastman Chemical Company, 2022 – 2024, **$556,536**. PI: Fanxing Li, Co-PIs: **W. J. Sagues**, Jian Dou, & Wenpei Gao
8. *A Feasibility Assessment of Waste Cotton to Bioenergy with Carbon Removal,* Cotton Incorporated, 2022 – 2024, **$52,000**. PI: Richard Venditti. Co-PI: **W. J. Sagues**
9. *Equipment Grant*, NCSU College of Agriculture and Life Science, 2022, **$80,000**, PI: Jay Cheng. Co-PI: **W. J. Sagues**, Shuijin Hu, Francois Birgand, Lingjuan Wang-Li, Praveen Kolar, and Wenqiao Yuan
10. **Roads to Removal – Options for Negative Emissions in the United States*, US Department of Energy, 2021 – 2024**, $4,400,000**. PI: Roger Aines (Lawrence Livermore National Laboratory), Co-PIs: **W. J. Sagues**, Jennifer Pett-Ridge, Sarah Baker, Eric Slessarev, Simon Peng, Corinne Scown, Hanna Brunig, Matt Langholtz, Dan Sanchez, Mark Ashton, Mark Ducey, Mark Bradford, Phil Robertson, Keith Paustian, Dermot Hayes, Jerome Dumortier, Mark Wright, Helen Pilorge, & Susan Hovorka
11. *Enzyme Enhanced Anaerobic Digestion of Source Separated Organics and Municipal Solid Waste*, Novozymes, 2021 – 2022, **$94,708**. PI: Jay Cheng, Co-PIs: **W. J. Sagues** & Praveen Kolar.
12. **Scaling Up Biocrude Derived Anode Material (BDAM)*, US Department of Energy's Bioenergy Technology Office, DE-FOA-0002203 SCUBA, Control Number: 2203-1679, 2021 – 2025, **$3,999,938**. PI: Sunkyu Park, Co-PIs: **W. J. Sagues**, Mark Nimlos (NREL), Steve Kelley, Hasan Jameel, Sang-Don Han (NREL), Yuan Yao (Yale)

PEER-REVIEWED PUBLICATIONS

Google Scholar

Published:

1. E. Woods, P. Berlin, J. Daystar, & **W. J. Sagues**. 2025. "Gaseous carbon dioxide removal from composting of biomass and cotton textile waste". *Waste Management* (IF:7.1), 207, 115108 https://doi.org/10.1016/j.wasman.2025.115108
2. J. Gonzalez-Aguirre, S. C. Dey, **W. J. Sagues**, Z. Combs, S. Rowland, A. Dutta, & S. Park. 2025. "Process Design and Techno-Economic Analysis for the Production of Bio-based Graphite and Liquid Hydrocarbons from Lignocellulosic Biomass" *Bioresource Technology* (IF: 9.0), 438, 133156 https://doi.org/10.1016/j.biortech.2025.133156
3. E. Woods, N. Clauser, J. Daystar, and **W. J. Sagues**. 2025. "Techno-economic assessment of atmospheric carbon removal via industrial composting of biomass waste with CO2 capture" *ACS Omega* (IF: 4.0), 10, 22, 22549–22561 https://doi.org/10.1021/acsomega.4c10158

4. J. Morizet-Davis, Y. Qiu, J. Daystar, **W. J. Sagues**, R. A. Venditti. 2025. "Environmental Life Cycle Assessment and Techno-Economic Assessment of Textile Waste Valorization via Modular Bioenergy with Carbon Capture, Utilization, and Storage" *Bioenergy Research*
5. N. Clauser, C. Scown, J. Pett-Ridge, & **W. J. Sagues**. 2025. "A techno-economic assessment of carbon dioxide removal pathways via biochemical conversion of lignocellulose to biofuels and bioplastics" *Renewable and Sustainable Energy Reviews* (IF: 16.3), 216, 115714 https://doi.org/10.1016/j.rser.2025.115714
6. L. Lower, S. Rowland, M. Regula, Z. A. Combs, S. Park, T. Vries, T. Vries, M. Nimlos, and **W. J. Sagues**. 2025. "Sustainable Graphite and Jet Fuel from Biorefinery Residue" *ChemSusChem* (IF: 7.5) https://doi.org/10.1002/cssc.202402509
7. Y. Qiu, L. Lower, V. R. Berrio, J. Cunniffe, P. Kolar, J.Cheng & **W. J. Sagues**. 2025. "The impacts of municipal and industrial organic waste components on the kinetics and potentials of biomethane production via anaerobic digestion" *Waste and Biomass Valorization* (IF: 2.6) https://doi.org/10.1007/s12649-025-02951-8
8. S. C. Dey, B Worfolk, **W. J. Sagues**, R. K. Bhardwaj, B. Tremolet de Villers, S. Rowland, M. R. Nimlos, S. Park "Low Temperature Processing of Bio-oil for Sustainable Biographite Production" *Energy & Fuels* (IF: 5.2) https://doi.org/10.1021/acs.energyfuels.5c01132
9. L. Lower, Y. Qui, R. C. Sartor, **W. J. Sagues**, J. Cheng. 2025. "Kinetic Modeling of Thermophilic Anaerobic Digestion of Lemnaceae for Biogas Production" *Bioenergy Research* (IF: 3.1) https://doi.org/10.1007/s12155-025-10824-0
10. E. Carrejo, H. Jameel, S. Park, & **W. J. Sagues**. 2025. "Biogenic Carbon Capture at Pulp Mills via Sodium Spiking" *International Journal of Greenhouse Gas Control* (IF: 4.6), 145, 104409 https://doi.org/10.1016/j.ijggc.2025.104409
11. S. C. Dey, L. Lower, T. Vook*, M. N. Islam, **W. J. Sagues**, S. D. Han, M. Nimlos, S. S. Kelley, and S. Park. 2024. "Catalytic graphitization of pyrolysis oil for anode application in lithium-ion batteries". *Green Chemistry* (IF: 9.3), 26, 15, 8840-8853 https://doi.org/10.1039/D4GC01647E
12. R. Wu, E. Carrejo, M. S. Reza, E. Woods, S. Razavi, S. Park, F. Lee, **W. J. Sagues**. 2024. "Kinetic Assessment of Pulp Mill-Derived Lime Mud Calcination in High CO_2 Atmosphere" *Fuel* (IF: 6.7), 373, 132372 https://doi.org/10.1016/j.fuel.2024.132372
13. N. Rafsan, S. B. Haque, S. Shah, **W. J. Sagues**, R. Ding, J. Ferraris, P. Kolar. 2024. "Poultry litter-derived biochar for supercapacitor applications" *Next Energy*, 5, 100171 https://doi.org/10.1016/j.nxener.2024.100171
14. S. T. Pires, A. Williams, J. Daystar, **W. J. Sagues**, K. Lan, and R. Venditti. 2024. "Evaluating cotton apparel with dynamic life cycle assessment: the climate benefits of temporary carbon storage". *Bioresources* (IF: 1.75) DOI: 10.15376/biores.19.3.5074-5095
15. S. C. Dey, B. Worfolk, L. Lower*, **W. J. Sagues**, M. Nimlos, S. S. Kelley, and S. Park. 2024. "Phenolic resin derived hard carbon anode for sodium-ion batteries: A review". *ACS Energy Letters* (IF: 19.5), 9, 2590 – 2614 https://doi.org/10.1021/acsenergylett.4c00688
16. E. Woods, V. R. Berrio, P. Berlin, Y. Qiu, N. Clauser, and **W. J. Sagues**. 2024. "Biomass Composting with Gaseous Carbon Dioxide Capture" *RSC Sustainability* https://doi.org/10.1039/d3su00411b
17. T. Vook, S. C. Dey, J. Yang, M. Nimlos, S. Park, S. D. Han, and **W. J. Sagues**. 2023. "Sustainable Li-ion anode material from Fe-catalyzed graphitization of paper waste" *Journal of Energy Storage* (IF: 9.4), 73, 109242

https://doi.org/10.1016/j.est.2023.109242

18. L. Lower, S. C. Dey, T. Vook, M. Nimlos, S. Park, and **W. J. Sagues**. 2023. "Catalytic graphitization of biocarbon for Li-ion anodes: A mini-review" *ChemSusChem* (IF: 7.5), e202300729
https://doi.org/10.1002/cssc.202300729
19. J. P. Dees, **W. J. Sagues**, E. Woods, H. M. Goldstein, A.J. Simon, & D. L. Sanchez. 2023. "Leveraging the Bioeconomy for Carbon Drawdown" *Green Chemistry* (IF: 9.3), ***25**, 2930-2957*
https://doi.org/10.1039/D2GC02483G
20. W. Peng, H. Bao, Y. Wang, E. Cote, **W. J. Sagues**, H. H. Weaver, J. Gao, D. Xiao, and Z. Tong. 2023. "Selective Depolymerization of Lignin Towards Isolated Phenolic Acids Under Mild Conditions" *ChemSusChem* (IF: 7.5)
https://doi.org/10.1002/cssc.202300750
21. E. R. Molina, T. Vook, **W. J. Sagues**, K. Kim, N. Labbé, S. Park, S. S. Kelley. 2023. "Green Needle Coke Production from Pyrolysis Biocrude toward Bio-based Anode Material Manufacture: Biochar Fines Addition Effect as "Physical Template" on the Crystalline Order" *ACS Sustainable Chemistry & Engineering* (IF: 7.1), *11, 8, 6944-6955*
https://doi.org/10.1021/acssuschemeng.2c06952
22. L. M. Lower, J. Cunniffe, J. J. Cheng, **W. J. Sagues**. 2022. "Coupling Circularity with Negativity in Food & Agriculture Systems" *Journal of the ASABE* (IF: 1.695)
doi: 10.13031/ja.14908
23. **W. J. Sagues**, H. Jameel, D. L. Sanchez, and S. Park. 2020. "Prospects for Bioenergy with Carbon Capture & Storage (BECCS) in the United States Pulp and Paper Industry" *Energy & Environmental Science* (IF: 32.4*), 13, 8, 2243-2261*
https://doi.org/10.1039/D0EE01107J
24. **W. J. Sagues**, J. Yang, N. Monroe, S. D. Han, T. Vinzant, M. Yung, H. Jameel, M. Nimlos, & S. Park. 2020. "A Simple Method for Producing Bio-Based Anode Materials for Lithium-Ion Batteries" *Green Chemistry* (IF: 9.3), *22, 7093 – 7108*
https://doi.org/10.1039/D0GC02286A
25. **W. J. Sagues**, C. A. Assis, P. Hah, D. L. Sanchez, Z. Johnson, M. Acharya, H. Jameel, and S. Park. 2020. "Decarbonizing Agriculture through the Conversion of Animal Manure to Dietary Protein and Ammonia Fertilizer" *Bioresource Technology* (IF: 5.807), *297*
https://doi.org/10.1016/j.biortech.2019.122493
26. H. Bao, **W. J. Sagues**, Y. Wang, W. Peng, L. Zhang, S. Yang, D. Xiao, and Z. Tong. 2020. "Depolymerization of Lignin into Monophenolics by Ferrous/Persulfate Reagent Under Mild Conditions" *ChemSusChem* (IF: 7.5)
https://doi.org/10.1002/cssc.202002240
27. **W. J. Sagues**, H. Jameel, S. Park, D. L. Sanchez. 2019. "Enhanced Carbon Dioxide Removal from Coupled Direct Air Capture-Bioenergy Systems" *Sustainable Energy & Fuels* (IF: 4.912), *3, 3135-3146*
https://doi.org/10.1039/C9SE00384C
28. **W. J. Sagues**, A. Jain, D. Brown, S. Aggarwal, A. Suarez, M. Kollman, S. Park, D. S. Argyropoulos. 2019. "Are Lignin-Derived Carbon Fibers Graphitic Enough?" *Green Chemistry* (IF: 9.3), *21, 4253-4265*
https://doi.org/10.1039/C9GC01806A
29. **W. J. Sagues**, H. Bao, J. Nemenyi, Z. Tong. 2018. "Lignin-First Approach to Biorefining: Utilizing Fenton's Reagent and Supercritical Ethanol for the Production of Phenolics and Sugars" *ACS Sustainable Chemistry & Engineering* (IF: 7.1), *6, 4, 4958-4965*
https://doi.org/10.1021/acssuschemeng.7b04500
30. E. Castro, I. U. Nieves, V. Rondon, **W. J. Sagues**, M. T. Fernandez-Sandoval, L. P. Yomano, S. W. York, J. E. Erickson, W. Vermerris. 2017. "Potential for ethanol production from different sorghum cultivars" *Industrial Crops and Products* (IF: 3.849*), 109, 367-373*

https://doi.org/10.1016/j.indcrop.2017.08.050

31. K. Gubicza, Z. Barta, I. U. Nieves, **W. J. Sagues**, K. T. Shanmugam, L. O. Ingram. 2016. "Techno-economic analysis of ethanol production from sugarcane bagasse using a Liquefaction plus Simultaneous Saccharification and Co-Fermentation process" *Bioresource Technology* (IF: 5.807)*, 208, 42-48*
http://dx.doi.org/10.1016/j.biortech.2016.01.093
32. E. Castro, I. U. Nieves, M. T. Mullinnix, **W. J. Sagues**, R. W. Hoffman, M.T. Fernandez-Sandoval, Z. Tian, B. Tamang, L. O. Ingram. 2014. "Optimization of dilute-phosphoric-acid steam pretreatment of *Eucalyptus benthamii* for biofuel production" *Applied Energy* (IF: 7.900)*, 125, 76-83*
http://dx.doi.org/10.1016/j.apenergy.2014.03.047
33. C. C. Geddes, M. T. Mullinnix, I. U. Nieves, R. W. Hoffman, **W. J. Sagues**, S. W. York, K. T. Shanmugam, J. E. Erickson, W. Vermerris, L. O. Ingram. 2013. "Seed train development for the fermentation of bagasse from sweet sorghum and sugarcane using a simplified fermentation process" *Bioresource Technology* (IF: 5.807)*, 128, 716-724*
https://doi.org/10.1016/j.biortech.2012.09.121

Under peer review:

1. J. Cunniffe, V. R. Berrio, C. R. Hunter, T. Nguyen, S. Salmon, N. Crook, A. Grunden, and **W. J. Sagues**. 2025. "Techno-Economic Analysis of Industrial-Scale Fermentation for Formate Dehydrogenase (FDH) Production" *Bioresources and Bioprocessing*
2. E. Woods, A. Trlica, P. Berlin, S. Bloszies, A. Woodley, R. Cook, and **W. J. Sagues**. 2025. "Alkaline Mineral Residues from Pulp Mills as a Sustainable and Economical Alternative to Lime Fertilizers" *Journal of Cleaner Production*
3. J. Cunniffe, N. Lavoine, J. Wang, V. R. Berrio, and **W. J. Sagues**. 2025. "Co-Production of Crystalline Cellulose and Biofuel from Low-Lignin Biomass" *Bioenergy Research*
4. M. Langholtz, **W. J. Sagues**, C. Levy, J. Field, D. L. Sanchez, P. Christensen, L. Murdoch, D.T. Ugarte, R. Jacobson, N. Zeng, D. Hartley, E. A. Heaton, C. Forsberg. 2025. "Alternative Biomass Uses Can Help Sustainable Aviation Fuels Achieve On-Time Arrival" *iScience*
5. S. C. Dey, S. M. Cho, J. A. Gonzalez-Aguirre, M. N. Islam, R. K. Bhardwaj, B. J. Tremolet de Villers, B. J. Worfolk, **W. J. Sagues**, S. M. Rowland, M. R. Nimlos, & S. Park. 2025. "Physicochemical Characterization and Catalytic Graphitization of Pyrolysis Oil Derived Biocoke for Use as Lithium-ion Battery Anode Material" *Journal of Analytical and Applied Pyrolysis*
6. E. Carrejo, R. Ortega, K. Lan, D. L. Sanchez, S. Park, and **W. J. Sagues**. 2025. "Quantifying Atmospheric Carbon Removal at Pulp and Paper Mills: A Life Cycle Assessment Across System Boundaries" *Carbon Neutrality*
7. J. Bayramova, S. Pires, P. Holden, **W. J. Sagues**, R. Venditti, and J. Daystar. 2025. "Environmental Impact of Open Burning of Polyester and Cotton Textile Waste: A Comparative Analysis" *Environmental Science and Pollution Research*
8. Y. J. Qiu, Z. Y. Zhou, S.S. Zuo, **W. J. Sagues**, X. Y. Gu, K. Mainali, C. E. Li, X. J. Li, S. L. Chen, and Y.Q. Yao. 2025. "Hyperthermophilic anaerobic digestion: A comprehensive review on theories, applications, challenges, and strategies" *Chemical Engineering Journal*

NATIONAL REPORTS

1. Jennifer Pett-Ridge, Hamed Ziad Ammar, Alvina Aui, Mark Ashton, Sarah E. Baker, Bruno Basso, Mark Bradford, Alexander P. Bump, Ingrid Busch, Edna Rodriguez Calzado, Jackson W.

Chirigotis, Nicolas Clauser, Sinéad Crotty, Nicholas Dahl, Tao Dai, Mark Ducey, Jerome Dumortier, Nathan C. Ellebracht, Ramon Gil Egui, Ames Fowler, Katerina Georgiou, Diamantoula Giannopoulos, Hannah Goldstein, Thomas Harris, Dermot Hayes, Chad Hellwinckel, Alina Ho, Mu Hong, Susan Hovorka, Elwin Hunter-Sellars, Whitney Kirkendall, Sara Kuebbing, Matthew Langholtz, Mark Layer, Ian Lee, Reid Lewis, Wenqin Li, Weier Liu, Jimena Terrazas Lozano, Abby Lunstrum, Allegra C. Mayer, Kimberley K. Mayfield, Wilson McNeil, Peter Nico, Anastasia O'Rourke, Simon H. Pang, Keith Paustian, George Peridas, Helene Pilorge, Maxwell Pisciotta, Lydia Price, Peter Psarras, G. Philip Robertson, **William Joe Sagues**, Daniel L. Sanchez, Corinne D. Scown, Briana Mordick Schmidt, Eric W. Slessarev, Noah Sokol, Alexander J. Stanley, Amy Swan, Crystal Toureene, Andrew A. Wong, Mark Mba Wright, Yuan Yao, Bingquan Zhang, Yao Zhang, and Roger D. Aines. *Roads to Removal: Options for Carbon Dioxide Removal in the United States*, December 2023, Lawrence Livermore National Laboratory, LLNL-TR-852901.
https://roads2removal.org/
https://doi.org/10.2172/2301853

NON-PEER REVIEWED PUBLICATIONS

1. W. J. Sagues, A. Woodley. 2022. "Building a Biotechnology Innovation Ecosystem to Mitigate Climate Change" –Report, University-Industry Demonstration Partnership (UIDP) https://uidp.org/custom-type/innovation-in-the-bioeconomy-mitigating-climate-change/

PATENTS

Pending

1. **William Joseph Sagues** & Ethan Woods. METHODS, DEVICES, AND SYSTEMS FOR BIOMASS COMPOSTING AND CO2 CAPTURE. 2023. North Carolina State University. PCT/US23/31060. 08/24/2023.
2. **William Joseph Sagues**, Sunkyu Park, Shaikat Chandra Dey, Brian Worfolk, and Mark Nimlos. LOW-TEMPERATURE PROCESSING OF BIO-OIL FOR COMMERCIAL GRAPHITE PRODUCTION. U.S. 63/627,169. 01/31/2024

PUBLISHED DATA

1. J.N. Welch, I.U. Nieves, E. Castro, V. Rondon Berrio, W. Vermerris, K.T. Shanmugam, L.O. Ingram, **W.J. Sagues**. 2021. SMDemoBioref: Data from the Stan Mayfield Demonstration Biorefinery. https://doi.org/10.5281/zenodo.5682712

ENTREPRENEURSHIP

1. Formal Science Advisor, Vaulted Deep, 2025 – present
2. Formal Science Advisor, Burnham RNG, 2024 – present
3. Informal Science Advisor, CO280, 2024 – present
4. Co-founder and board member, Flip Biosystems, Inc, 2023 – 2024
5. Participant, NSF I-Corps, NCSU regional program, 2023
6. Formal Science Advisor, Mote Hydrogen, 2021 – 2023

MEDIA & PRESS RELEASES

1. W J. Sagues quoted in an article published by Trellis (formerly GreenBiz). 2025. "Why Microsoft is investing in a pulp and paper mill"

https://trellis.net/article/microsoft-co280-carbon-removal-pulp-paper/

2. J. Pett-Ridge, W. J. Sagues, et al. cited in the 2025 Economic Report of the President, Chapter 5: Achieving a Net Zero Carbon Dioxide Emissions Economy in the United State https://www.govinfo.gov/content/pkg/ERP-2025/pdf/ERP-2025-chapter5.pdf
3. W. J. Sagues, A. Woodley, J. Hart. 2025. "Can basalt capture carbon on the farm and help soils?" Southeast Farm Press. https://www.farmprogress.com/soil-health/can-basalt-capture-carbon-on-the-farm-and-help-soils-
4. W. J. Sagues, J. Hart. 2024. "Explainer: How do carbon offsets and insets work?" Southeast Farm Press. https://www.farmprogress.com/conservation-and-sustainability/explainer-how-do-carbon-offsets-and-insets-work-
5. W. J. Sagues, T. Howell. 2023. "The Lead", interviewed on a podcast hosted by the American Society of Agricultural & Biological Engineers (ASABE)
6. W. J. Sagues. 2023. "The Quest for Net Zero" interviewed on the "Farm, Food, and You" podcast hosted by NCSU College of Agriculture and Life Sciences https://farmsfoodyou.buzzsprout.com/1095827/14021098-the-quest-for-net-zero
7. W. J. Sagues, J. Daystar. 2023. "Threaded Together – Sustainability and Cotton", interviewed on a podcast hosted by Ecotextile News https://www.ecotextile.com/2023102031319/materials-production-news/podcast-thread-together-sustainability-and-cotton.html
8. S. Jones, W. J. Sagues. 2023. "The Quest for Net Zero" article published the NCSU's College of Agriculture & Life Sciences (CALS) https://cals.ncsu.edu/news/joe-sagues-carbon-recycling/
9. W. J. Sagues, D. Thompson, & S. Lommel. 2023. Live segment on CBS My Carolina "Long-Term Carbon Sequestration" https://www.cbs17.com/my-carolina/my-carolina-videos/monday-february-20th-cheerwine-noda-brewing-partner-to-create-cheerwine-ale/
10. J. Hart., W. J. Sagues. 2023. "Carbon bathtub filling up too fast". Southeast Farm Press. https://www.farmprogress.com/conservation-and-sustainability/carbon-bathtub-filling-up-too-fast
11. S. Jones, W. J. Sagues. 2022. "$2.25M DOE Grant Awarded to Develop Sustainable Aviation Fuel and Graphite from Waste Streams", https://cals.ncsu.edu/news/2-25m-grant-awarded-to-develop-sustainable-energy-products-from-waste-streams/
12. W. J. Sagues. 2022. Interviewed by WRAL-TV (NBC) in Raleigh, NC on the sustainable practice of converting sunflower residues into biodiesel fuel: https://www.wral.com/dix-park-sunflowers-turned-into-biofuel-after-they-wilt/20376732/
13. E. Packard, "NC State Announces 2021-22 Goodnight Early Career Innovators", https://news.ncsu.edu/2022/04/nc-state-announces-2021-22-goodnight-early-career-innovators%EF%BF%BC/
14. K. A. Askey, J. Welch, B. Wilson, & W. J. Sagues. 2022 "Bioenergy – Data Boost", ORNL press release, https://www.ornl.gov/news/bioenergy-data-boost
15. W. J. Sagues & M. Grattiri. 2021 "Merging Industry, Academia and National Labs at the Electrosynthesis of Chemicals & Fuels Session", ACS Nexus, https://communities.acs.org/t5/GCI-Nexus-Blog/Merging-Industry-Academia-and-National-Labs-at-the/ba-p/85819
16. W. J. Sagues. 2021. "The Farming We Need", Indigo Ag Monthly Newsletter, personal quote included in newsletter sent to over 4,000 sustainability officers
17. D. Shore, W. J. Sagues. 2021 "New Faculty Focus: A Focus on Carbon" NCSU press release, https://www.bae.ncsu.edu/news/2021/new-faculty-focus-a-focus-on-carbon/
18. W. J. Sagues, 2019, "Forest Biomaterials Joe Sagues Awarded Prestigious US DOE Fellowship", https://cnr.ncsu.edu/fb/news/2019/09/forest-biomaterials-joe-sagues-awarded-prestigious-u-s-doe-fellowship/

TEACHING

North Carolina State University, 2021 – present

1. BAE 321: Bioprocess Engineering Fundamentals (3 credits, fall, lead instructor)
2. BAE 315: Engineering Properties of Biological Materials (1 credit, spring, lead instructor)
3. BAE 495/590: Carbon Sequestration (1 credit, spring, lead instructor)
4. PSE 295/FB 595: Engineering Concepts for the Production of Bio-Based Materials, Chemicals, & Energy (3 credits, every other spring, co-instructor)

USDA-Sponsored Extension Foundation, 2020 – present

1. The Sustainable Bioeconomy – Free online course (co-instructor)
    a. https://campus.extension.org/enrol/index.php?id=1641
2. Biomass Conversion for Bioproducts & Bioenergy – Free online course (co-instructor)
    a. https://campus.extension.org/enrol/index.php?id=1642

MENTORING

Postdoctoral Advising
Ethan Woods, PhD, 2025 - present
Sumon Reza, PhD, 2023 - present
Shammya Afroze, PhD, 2024 - 2025
Yaojing Qi, PhD, 2022 - 2025
Nate Garland, PhD, 2024
Nicolas Clauser, PhD, 2022 - 2023
Ruochen Wu, PhD, 2021 - 2022

Graduate Student Advising
PhDs in progress as Chair (Total = 3)

1. Lillian Lower, BAE, NCSU, 2023 – 2027, *Catalytic Graphitization of Sargassum Waste into Li-ion Graphite Anode Material*
2. Nora Sauers (Co-Chair), BAE, NCSU, 2025 – 2029, *Carbon Removal via Enhanced Rock Weathering in Organic Farming*
3. Edgar Carrejo, Forest Biomaterials, NCSU, 2021 – 2025, *Techno-Economic and Life Cycle Assessment of Emerging Methods to Decarbonize Industrial Biomass Pulping*

MS in progress as Chair (Total = 2)

1. Pablo Ortiz, BAE, NCSU, 2025 – 2028, *Scaling Up Industrial Composting with Gaseous CO_2 Capture*
2. Tanvir Islam, BAE, NCSU, 2025 – 2027, *Atmospheric Carbon Removal via Burial of Cotton Waste Materials*

MS graduates as Chair (Total = 3)

1. June Khongpatimakorn, BAE, 2022 – 2024, *A Feasibility Assessment of Waste Cotton to Carbon-Negative Bioproducts*
2. Lillian Lower (Co-Chair), BAE, NCSU, 2021 – 2023, *Thermophilic Anaerobic Digestion of Lemnaceae Biomass for Biogas Production*
3. Trevor Vook, BAE, NCSU, 2020 – 2022, *Catalytic Graphitization of Biocarbon for Green Battery Anodes*

PhD graduates as Chair (Total = 3)

1. Julia Cunniffe (straight to PhD from BS), BAE, NCSU, 2021 – 2025, *Data-Driven Techno-Economic Assessment of Industrial Bioprocessing With and Without Carbon Capture*

2. Vanessa Rondon Berrio, BAE, NCSU, 2021 – 2025, *Advancing the Formate Bioeconomy via Microbe Discovery, Metagenomics, Genetic Engineering, and Techno-Economic Analysis*
3. Ethan Woods (straight to PhD from BS), BAE, NCSU, 2021 – 2025, *Composting and Enhanced Rock Weathering: The Environmental Impact and Economic Feasibility of Two Emerging Carbon Removal Pathways*

PhD graduates as Committee Member (Total = 4)

1. Ishita Kamboj, Materials Science & Engineering, NCSU, 2020-2024, *Design of Lithium-ion Battery Cathode Materials and Architectures*
2. Hyeonji Park, Forest Biomaterials, NCSU, 2020 – 2023, *Valorization of Sludge-derived Hydrolysate into Furan Chemicals*
3. Rodrigo Tello Buitrago, Forest Biomaterials, NCSU, 2018 – 2022, *Life-Cycle Environmental and Economic Assessment of Diverse Pulp Grades – Targeting Energy Efficiency and GHG Reductions based on Process Simulation*
4. Eliezer Reyes Molina, Forest Biomaterials, NCSU, 2018 – 2022, *Graphite Nucleation Induced by Biochar Particles in Bio-Oil*

PhDs in progress as Committee Member (Total = 9)

1. Rashid Imoro, Crop & Soil Science, NCSU, 2024 – 2028, *Biochar and Basalt as a Soil Health and Carbon Sequestration Strategy for N.C. Agriculture*
2. Gavin Gaynor, Forest Biomaterials, NCSU, 2023 – 2026, *Development of a butanol/water-based biorefinery for the valorization of miscanthus: Process optimization, solvent recovery, and modeling*
3. Maria Higuita, Forestry & Environmental Resources, NCSU, 2023 – 2027, *Building a synthetic ectomycorrhizal community based on the ectomycorrhizal species associated with Loblolly pine*
4. Jonathan Morizet-Davis, Forest Biomaterials, 2023 – 2027, *Techno-economic and environmental life cycle assessment of textile waste valorization strategies*
5. Steven Pires, Forest Biomaterials, NCSU, 2022 – 2026, *Evaluating cotton apparel with dynamic life cycle assessment: the climate benefits of temporary carbon storage*
6. Nazrul Islam, Forest Biomaterials, NCSU, 2024 – 2028, *Mechanistic Assessment of Biographite Synthesis for Green Energy Storage*
7. Jose Gonzalez-Aguirre, Forest Biomaterials, NCSU, 2024 – 2028, *Process Design and Techno-Economic Analysis for the Production of Bio-based Graphite and Liquid Hydrocarbons from Lignocellulosic Biomass*
8. Jingjing Wang, BAE, NCSU, 2022 – 2025, *Redox-enhanced bio-succinic acid fermentation*
9. Shaikat Chandra Dey, Forest Biomaterials, NCSU, 2020 – 2024, *Catalytic Graphitization of Biocrude for Green Lithium-Ion Batteries*

MS graduates as Committee Member (Total = 2)

1. Nur-Al-Sarah Rafsan, Biological & Agricultural Engineering, NCSU, 2021 – 2023, *S-doped Biochar for Supercapacitors*
2. Matthew Byington, Forest Biomaterials, NCSU, 2020 – 2022, *Optimization of the Graphite Exfoliation & Compression Process*

Undergraduate Research Assistant Advising

1. Rishita Tubati, BAE, NCSU, 2025 – present
2. Sai Gosala, BAE, NCSU, 2025 – present
3. Gray Hudson, BAE, NCSU, 2025 – present
4. Abby Studneck, BAE, NCSU, 2025 - present
5. Harrison King, BAE, NCSU, 2024 - present
6. Caleb Carter, CBE, NCSU, 2024

7. Perry Berlin, BAE, NCSU, 2022 – present
8. Chloe Lum, BAE, NCSU, 2022 – present
9. June Khongpatimakorn, BAE, NCSU, 2022
10. Julianne Mahley, CBE, NCSU, 2022 – 2023
11. Shomari Presswood, BAE, NCSU, 2022
12. Paige Seibert, BAE, NCSU, 2021 – 2022
13. Delani McKee, BAE, NCSU, 2021 – 2022
14. Luke Szoch, BAE, NCSU, 2021 – 2022
15. Nicholas Monroe, Forest Biomaterials, NCSU, 2019 – 2020
16. Thomas Cluen, Forest Biomaterials, NCSU, 2018 – 2019
17. John Nemenyi, ABE, UF, 2015 – 2017
18. Zhonglin Lai, ABE, UF 2015 - 2016

Undergraduate Senior Design Mentorship

1. Mentor, Senior Design Group in Dept. of Biological & Agricultural Engineering, NCSU, 2023-2024, 2024-2025, and 2025-2026

Awards received by graduate and undergraduate research assistants

1. Lillian Lower (PhD Student): Graduate Outstanding Leadership Award, College of Agriculture and Life Sciences (CALS), NCSU, 2025
2. Lillian Lower (PhD Student): Selected to attend the Next Generation Electrochemistry (NGenE) Workshop, Argonne Collaborative Center for Energy Storage Science (ACCESS), Energy Storage Research Alliance (ESRA), and University of Illinois Chicago (UIC) – through the George Crabtree Institute for Discovery and Sustainability, 2025
3. Vanessa Rondon Berrio (PhD Student): First place, Student Research *Poster* Competition, Society for Industrial Microbiology (SIMB) Symposium on Bio-materials, fuels, and chemicals (SBFC), 2024
4. Vanessa Rondon Berrio (PhD Student): Third place, Student Research *Oral* Competition, Society for Industrial Microbiology (SIMB) Symposium on Bio-materials, fuels, and chemicals (SBFC), 2024
5. Perry Berlin (Undergraduate Student): REEP Scholar, BAE, NCSU, 2024 – 2025
6. Ethan Woods (PhD Student), William Walton and Emily Inscoe Stevens Fellowship for Plant, Soil, and Environmental Stewardship, NCSU, 2024
7. Julia Cunniffe (PhD Student), Graduate Student Sustainability Award, College of Agriculture and Life Sciences (CALS), NCSU, 2024
8. Julia Cunniffe (PhD Student), Presentation Excellence Award, Annual International Meeting, American Society of Agricultural & Biological Engineers, 2023
9. Lillian Lower (PhD Student), Presentation Excellence Award, Annual International Meeting, American Society of Agricultural & Biological Engineers, 2023
10. Vanessa Rondon Berrio (PhD Student), Presentation Excellence Award, Annual International Meeting, American Society of Agricultural & Biological Engineers, 2023
11. Lillian Lower (PhD Student): KEITS Climate Leaders Student Fellow, Kenan Institute of Engineering, Technology, & Science, 2023 – 2024
12. Lillian Lower (PhD Student): Center for Environmental Farming Systems (CEFS) Graduate Fellow, NCSU, 2023 – 2024
13. Ethan Woods (PhD Student): Accepted into NCSU's competitive "Long View Project" https://provost.ncsu.edu/university-interdisciplinary-programs/longview/
14. Lillian Lower (PhD Student): First place, Student Research Poster Competition, Society for Industrial Microbiology (SIMB) Symposium on Bio-materials, fuels, and chemicals (SBFC), 2023

15. Paige Seibert (Undergraduate): Science Undergraduate Laboratory Internship (SULI) at the National Renewable Energy Laboratory (NREL), 2023
16. Julia Cunniffe (PhD Student): Summer fellowship with the Bipartisan Policy Center, 2023
17. Julia Cunniffe (PhD Student): KEITS Climate Leaders Student Fellow, Kenan Institute of Engineering, Technology, & Science, 2022 – 2023
18. Julia Cunniffe (PhD Student): College of Engineering Dean's Doctoral Fellowship, 2022-2023
19. Ethan Woods (PhD Student): Technology-to-Market Scholar for the Department of Energy's Advanced Research Projects Agency (ARPA-E), 2022
20. Ethan Woods (PhD Student): Consulting Intern, Aemetis Bioenergy, 2022
21. Julia Cunniffe (MS Student): Consulting Intern, Aemetis Bioenergy, 2022
22. Ethan Woods (PhD Student): Student Delegate, Consortium for Advanced Bioeconomy Leadership Education (CABLE), USDA, 2021 - 2022
23. Julia Cunniffe (MS Student): Student Delegate, Consortium for Advanced Bioeconomy Leadership Education (CABLE), USDA, 2021 – 2022
24. Trevor Vook (MS Student): 2nd place, Research Competition, NC Agricultural & Life Sciences, NCSU, 2021
25. Trevor Vook (MS Student): Outstanding Student Presentation, Annual International Meeting, American Society of Agricultural & Biological Engineers, 2021
26. Vanessa Rondon Berrio (PhD Student), Robert O. Evans Fellowship, BAE, NCSU, 2021
27. Luke Szoch (Undergraduate Student): REEP Scholar, BAE, NCSU, 2021 – 2022
28. Paige Seibert (Undergraduate Student): Summer Research Fellow, Office of Undergraduate Research, NCSU, 2021
29. John Nemenyi & Zhonglin Lai (Undergraduate Students): 1st place, Research Competition, ABE, UF, 2016

Student Organization Advising

1. Mentor, Grand Challenges Scholar Program, NCSU, 2022 – present
2. Mentor, CHE 497/498 Chemical Engineering Projects I & II, NCSU, 2024
3. Mentor, Senior Design Group in MBA 585: Current Topics in Biosciences Management, NCSU, 2022
4. Mentor, Graduate Student Association, Dept. of Biological & Agricultural Engineering, NCSU, 2021 – present
5. Mentor, Undergraduate Senior Design, Dept. of Chemical Engineering, University of British Columbia, 2020 – 2021

HONORS & AWARDS

1. Research article selected for inclusion in *ChemSusChem*'s (IF: 7.5) prestigious Sustainability Talents Special Collection, 2025
2. Outstanding Young Faculty Member, Biological & Agricultural Engineering, NC State University, 2023
3. KIETS Climate Leaders Faculty Fellow, Kenan Institute of Engineering, Technology, & Science, 2023 – 2024
4. 'Top Viewed Article' award in recognition of being within top 10% of most-viewed papers, *ChemSusChem* (IF: 7.5), 2023
5. Superior Paper Award "Coupling Circularity With Carbon Negativity in Food and Agriculture Systems", 2023, American Society of Agricultural & Biological Engineers
6. Finalist, NCSU Graduate School Outstanding Graduate Faculty Mentor Award, 2023
7. Outstanding Researcher, Biological & Agricultural Engineering, NC State University, 2022
8. KIETS Climate Leaders Faculty Fellow, Kenan Institute of Engineering, Technology, & Science, 2022 – 2023
9. Goodnight Early Career Innovator, NCSU, 2022

10. Honorary Advisor, Consortium for Advanced Bioeconomy Leadership Education (CABLE), USDA, 2021
11. Graduate Student Research (SCGSR) Fellowship, Office of Science, U.S. Department of Energy, 2020
12. Research article selected as one of the journal's 'Hot Articles of 2020,' a distinction awarded to the top 10% of published papers, *Energy and Environmental Science* (IF: 32.4)
13. CIBA Research Award, American Chemical Society - Green Chemistry Institute, 2018
14. 1st Place – Boyd Scott Graduate Research Award, Annual International Meeting, American Society of Agricultural and Biological Engineers, 2017
15. 1st Place – 5-Minute Rapid Fire Presentation + Poster Competition, International Bioproducts Conference, Technical Association of the Pulp & Paper Industry, 2016
16. 1st Place – Outstanding Student Presentation in Applied Research 38th Symposium on Biotechnology for Fuels & Chemicals, Society for Industrial Microbiology and Biotechnology, 2016
17. Awards Finalist – New Faces of Engineering, New Faces of Engineering – Professional Edition, DiscoverE, National Society of Professional Engineers, 2016
19. Finalist, Andrews Launch Accelerator Startup Competition, Entrepreneurship Clinic, North Carolina State University, 2020
20. Graduate School Fellowship, College of Natural Resources, North Carolina State University, 2018
21. 1st Place – Research Poster Symposium, University of Florida's Chemical Engineering Department, 2017
22. 2nd Place – Research Poster Symposium, University of Florida's Agricultural and Biological Engineering Department, 2017
23. Service Award, Florida Section of the American Society of Agricultural & Biological Engineers, 2016
24. Graduate Student Travel Grant, Graduate Student Council, University of Florida, 2016
25. Graduate Research Fellowship, Informatics Institute, University of Florida, 2016
26. Graduate School Fellowship, College of Engineering, University of Florida, 2015

PROFESSIONAL SERVICE

Grant Program Workshop Participation

1. Clean Air Task Force (CATF), Biomass Carbon Removal and Storage (BiCRS) Protocol Assessment Workshop, 2025
2. US DOE, Developing Biomass Carbon Removal & Storage (BiCRS) Life Cycle Assessment (LCA) Best Practices, 2024
3. US DOE ARPA-E Program on Carbon Harvesting (2024)
4. US NSF FEWSUS: Food-Energy-Water Bioeconomies for Net-Zero Transition (2024)
5. US DOE FECM Program on Biomass Carbon Removal & Storage (2023)
6. US DOE ARPA-E Program on Carbon Farming (2022)
7. US DOE ARPA-E Program on Carbon Sequestering Building Materials (2021)
8. US DOE ARPA-E Program on Decarbonizing the Steel Industry (2021)
9. US DOE BETO Program on Utilizing Biorefinery Data (2020)

Grant Proposal Reviewer

1. USDA SBIR/STTR Biofuels and Biobased Products (2024)
2. NSF EPSCoR Advancing climate change research and resilience capacity to expand opportunities for disproportionately affected communities (2023)
3. USDA SBIR/STTR 8.1 Forests and Related Products (2022)
4. US DOE ARPA-E Program on Entrepreneurship in Clean Energy (2021)

5. North Dakota Industrial Commission Program on CO_2 Capture & Utilization (2021)
6. North Dakota Industrial Commission Program on CO_2 Capture & Utilization (2020)
7. US DOE ARPA-E Program on Direct Air Capture and Ocean Capture (2020)

Manuscript Reviewer

1. *Biofpr: biofuels, bioproducts, and biorefining* (2020, 2021, 2022, 2025)
2. *ACS Environmental Science & Technology (ES&T)* (2025)
3. *Journal of Environmental Chemical Engineering* (2025)
4. *Nature Reviews Earth & Environmen*t (2024)
5. *Discover Applied Sciences* (2024)
6. *ACS Sustainable Chemistry & Engineering* (2023)
7. *ACS Applied Energy Materials* (2023)
8. *iScience* (2022)
9. *Frontiers in Climate* (2021)

Institutional Leadership & Membership

1. Vice Chair, Circular Bioeconomy Systems Institute (CBSI), American Society of Agricultural & Biological Engineers (ASABE), 2025 - present
2. Founder & Chair, Bioprocess Startup Competition, American Society of Agricultural & Biological Engineers (ASABE), 2021 - present
3. Board Member, NCSU's Sustainability Fund, 2023 – present
4. Mentor, Campus as a Classroom Internship Program, Sustainability Office, NCSU, 2025 - present
5. Elected Member, American Society of Agricultural and Biological Engineers (ASABE) Nominating Committee, 2024 – 2026
6. Member, Student Competition Committee P-120, American Society of Agricultural & Biological Engineers (ASABE), 2021 - present
7. Member, ASE-16, Engineering for Sustainability, American Society of Agricultural & Biological Engineers (ASABE), 2021 - present
8. Scientific Committee Member, International Symposium on Wood, Fiber and Pulping Chemistry (ISWFPC), 2025
9. NSF I-Corps, NCSU regional program, 2023
10. Chair, Working Group 1, Circular Bioeconomy Systems Task Force, American Society of Agricultural & Biological Engineers (ASABE), 2021 - 2023
11. Invited Technical Advisor & Writer, Leveraging Biotechnologies to Mitigate Climate Change – Workshop & Report, University-Industry Demonstration Partnership (UIDP), 2021 - 2022
12. Secretary, Florida Section of the American Society of Agricultural & Biological Engineers, 2015 – 2017

Conference Leadership

1. Planning Committee Member, Bioderived Materials and Chemicals in Circular Bioeconomy Systems Conference, Interinstitutional Conference led by NCSU, UTennessee, VTech, HudsonAlpha, and AgInnovation South, 2025
2. Moderator, Bioprocess Startup Competition, The American Society of Agricultural & Biological Engineers' 2022, 2023, 2024, & 2025 Annual International Meetings
3. Chair, Graduate Student Oral Presentations & Rapid Fire Poster Presentations, 2024, Society for Industrial Microbiology (SIMB) Symposium on Bio-materials, fuels, and chemicals (SBFC)
4. Co-Chair, Section on Biodegradable Polymers from Renewable & Waste Resources and Biocomposites, American Institute of Chemical Engineers (AIChE) 2023 Annual Conference

5. Chair, Emerging Research Showcase: *Long-Term Carbon Sequestration*, 2023, NCSU College of Agriculture & Life Sciences https://www.eventbrite.com/e/emerging-research-showcase-long-term-carbon-sequestration-tickets-467644085047
6. Organizer and Moderator, Workshop on Circular Bioeconomy Systems, The American Society of Agricultural & Biological Engineers' 2022 Annual International Meeting
7. Symposia Director, The American Chemical Society Green Chemistry Institute's 2021 Annual Green Chemistry & Engineering Conference -- Symposia: Electrosynthesis of Chemicals & Fuels (co-sponsored by iScience)
8. Convener and Moderator, Session on Electrosynthesis of Chemicals & Fuels, The American Chemical Society Green Chemistry Institute's 2021 Annual Green Chemistry & Engineering Conference

Seminar Leadership

1. Coordinator, research seminar by visiting professor Dr. Daniel Sanchez from UC Berkeley. 2023. "Markets for Biomass Carbon Removal"
2. Coordinated meeting to present advancements in carbon capture in the pulp and paper sector. 2023. Attendance: 25. Attendees from UC Berkeley, US Department of Energy, Indigo Ag, Cotton Incorporated, Andrtiz, and Westrock.
3. Coordinator, webinar series on carbon dioxide removal, NCSU, 2021

Student Engagement

1. Guest lecturer, Introduction to Sustainable Materials Technology (SMT 200), Lecture Dr. Perry Peralta, NCSU, 2020, 2021, 2022, 2023
2. Guest lecturer, Introduction to Engineering and Problem Solving (E101), NCSU, 2022, 2023
3. Invited judge, Research Poster Competition, 2023, Society for Industrial Microbiology (SIMB) Symposium on Bio-materials, fuels, and chemicals (SBFC)
4. Invited Judge, Poster Competition, American Institute of Chemical Engineers – Bioenergy Conference, 2020
5. Professional Development Group Leader, Forest Biomaterials Graduate Student Association, North Carolina State University, 2019
6. Founder & President, Technical Association of the Pulp and Paper Industry Student Chapter, University of Florida, 2016 – 2017
7. President, Biological Engineering Graduate Student Organization, University of Florida, 2016 – 2017
8. Treasurer, Chemical Engineering Graduate Student Organization, University of Florida, 2016 – 2017
9. Pen-Pal, Letters to a Pre-Scientist, 2015 – 2017
10. Invited Judge, State Science & Engineering Fair, Florida Foundation for Future Scientists, 2016
11. Invited Judge, Future City Competition, DiscoverE's National Science Fair, 2016

Professional Society Membership

1. Electrochemical Society, 2025 – present
2. American Society of Agricultural & Biological Engineers, 2015 – present
3. American Institute of Chemical Engineering, 2015 – present
4. Society for Industrial Microbiology & Biotechnology, 2015 – present
5. Institute of Biological Engineers, 2015 – 2022
6. American Chemical Society, 2017 – 2021
7. Technical Association of the Pulp and Paper Industry, 2015 – 2020

PRESENTATIONS

Invited Oral Presentations

1. **W. J. Sagues**. 2025. "Quantifying Atmospheric Carbon Removal at Pulp and Paper Mills: A Life Cycle Assessment Across System Boundaries" Bioderived Materials and Chemicals in Circular Bioeconomy Systems Conference
2. **W. J. Sagues.** 2025. "Upcycling Cotton Textile Waste into High Quality Biochar and Activated Carbon for Energy Storage Applications" Cotton Beltwide Conference
3. **W. J. Sagues**. 2025. "Kinetic Assessment of Pulp Mill-Derived Lime Mud Calcination in High CO_2 Atmosphere" International Symposium on Wood Fiber and Pulping Chemistry
4. **W. J. Sagues.** 2025. "Techno-Economic Screening to Assess the Feasibility of Bio-Electrochemical Reduction of CO2 to Formic Acid" Biocatalyst Interactions with Gases (BIG) Research Symposium
5. **W. J. Sagues.** 2024. "Roads to Removal: Opportunities for Carbon Removal in North Carolina". Invited panelist at the UNC Clean Tech Summit
6. **W. J. Sagues**. 2024. "Circular Battery Anodes via Catalytic Graphitization of Biomass" US NSF workshop on FEWSUS: Food-Energy-Water Bioeconomies for Net-Zero Transition
7. **W. J. Sagues**. 2024. "Emerging Biomass Carbon Removal & Storage Technologies" Invited seminar for the Clean Air Task Force (CATF)
8. **W. J. Sagues.** 2024. "My Journey to Teaching & Innovation in Carbon-Negative Bioprocessing". Thomas Jefferson Scholars, NCSU
9. **W. J. Sagues.** 2024. "Carbon Removal: The Gold Standard for Carbon Credits". Invited panelist at the Renewable Energy Finance Forum (REFF) – Wall Steet.
10. **W. J. Sagues**. 2024. "Advancing the Bioeconomy via Applied Innovations in Circular and Carbon-Negative Bioprocessing" Invited seminar at New Mexico State University
11. **W. J. Sagues**. 2024. "Advancing the Bioeconomy via Applied Innovations in Circular and Carbon-Negative Bioprocessing" Invited seminar at the University of Arkansas
12. **W. J. Sagues**. 2024. "Leveraging the Bioeconomy for Circularity and Carbon Removal " Invited presentation at the USDA Frontiers in Biorefining Conference
13. **W. J. Sagues.** 2024. "Biocarbon Flow Capacitors" Invited presentation at the US Department of Energy (DOE) Advanced Research Projects Agency – Energy (ARPA-E)'s Carbon Harvesting Workshop
14. **W. J. Sagues.** 2023. "The Potential for Biomass Carbon Removal & Storage in the US Bioeconomy" Invited Key Note presentation. Kenan Institute for Engineering, Technology & Science (KIETS) Research Symposium.
15. **W. J. Sagues.** 2023. "The Shifting Role of Bioproducts in Circular Systems and the Importance of Interdisciplinarity" Invited Key Note presentation. American Society of Agricultural & Biological Engineers Circular Bioeconomy Systems Day as part of the Annual International Meeting
16. **W. J. Sagues**. 2023. "Valorizing atmospheric CO_2 via Flipped Composting". NC Chapter of the Solid Waste Association of North America
17. **W. J. Sagues** 2022. "Circular Bioeconomy Systems & Carbon Dioxide Removal". Keynote speaker at ASABE's tri-state section meeting between SC, NC, and VA.
18. **W. J. Sagues**. 2022. "The Biocarbon Utilization & Sequestration Lab". Oral presentation at NCSU Bioenergy symposium hosting the Idaho National Laboratory
19. **W. J. Sagues**, A. Woodley. 2022. "Highlights of the UIDP Workshop: Leveraging Biotechnologies to Mitigate Climate Change" UIDP webinar series
20. **W. J. Sagues.** 2022. "Bioeconomy Supply Chains & Conversion Processes for Carbon Removal". Oral presentation at US Department of Energy's Advanced Research Projects Agency's Workshop on Carbon Farming

21. **W. J. Sagues.** 2022. "Opportunities for Industrial Carbon Mineralization". Oral presentation to the company Nouryon.
22. **W. J. Sagues.** 2022. "Findable, Accessible, Interoperable, and Reusable (FAIR) Data from the Stan Mayfield Demonstration Cellulosic Biorefinery". Oral presentation at the US Department of Energy's Bioenergy Technology Systems Development and Integration Office
23. **W. J. Sagues.** 2022. "A Carbon-Negative Bioeconomy". Oral presentation at NCSU Student Energy Club's monthly meeting
24. **W. J. Sagues.** 2022. "Carbon Dioxide Removal via Engineered & Natural Biosystems". Oral presentation at the University of Florida's Biocomplexity Research Group's monthly seminar series
25. **W. J. Sagues.** 2022. "Opportunities for CO_2 Removal in the Pulping Industry" Oral presentation at the International Symposium on Wood, Fiber, and Pulping Chemistry (cancelled due to COVID reasons)
26. **W. J. Sagues,** J. Cunniffe*, L. Lower*, & J. Cheng. 2021 **"**Coupling Circularity with Negativity in Food & Agriculture Systems" Oral presentation at the American Society of Agricultural & Biological Engineers Member Hour
27. **W. J. Sagues** 2021 "Introduction to Biocarbon Utilization & Sequestration" Oral presentation for the Sustainable Materials & Technology program at NCSU
28. **W. J. Sagues**, T. Vook*, V. Rondon*, E. Woods*, J. Cunniffe*, & L. Lower*. 2021. "Going Carbon Negative – An Opportunity for Agricultural & Biological Engineers" Oral presentation at the American Society of Agricultural & Biological Engineers Annual North Carolina State Section Meeting
29. **W. J. Sagues** 2021 "The Grand Challenge of Carbon Sequestration" Oral presentation to the NCSU course E102: Engineering in the 21st Century
30. **W. J. Sagues** 2021 "Introduction to the Bioeconomy and Carbon Sequestration" Oral presentation to the Environmental Science program at North Carolina Central University
31. **W. J. Sagues** 2021 "Carbon Sequestering Building Materials" Oral presentation at the workshop on Carbon Accounting in Land Development, hosted by Dr. Bill Hunt at NCSU
32. **W. J. Sagues** 2021 "Emerging Opportunities for Biological Carbon Sequestration" Oral presentation at the Consortium for Advanced Bioeconomy Leadership Education (CABLE) Annual Conference
33. **W. J. Sagues** 2020. "Biocarbon Utilization & Sequestration" Oral presentation at Cotton Incorporated
34. **W. J. Sagues** 2020. "Integrating Carbon Capture, Utilization, & Sequestration into Pulp & Paper Mills" Oral presentation as Horizon Lecture Series Speaker at Kimberly-Clark
35. **W. J. Sagues** 2020. "Integrating Carbon Capture, Utilization, & Sequestration into Pulp & Paper Mills" Oral presentation at UC Berkeley & Carbon 180's Conference on Bioenergy with Carbon Capture & Storage
36. **W. J. Sagues** 2020. "Scale-Up Data: A Hidden Asset" Oral presentation at the DOE Bioenergy Technology Office Data Workshop

Other Oral Presentations

** indicates graduate or undergraduate student under my advising*

37. V. R. Berrio*, A. Grunden, N. Crook. S. Salom, **W. J. Sagues**. 2025. "Homologous expression of formate dehydrogenase from Methylobacterium extorquens for carbon utilization technologies." American Society of Agricultural & Biological Engineers Annual International Meeting
38. T. Islam*, J. Daystar, R. Venditti, **W. J. Sagues**. 2025. "Atmospheric Carbon Removal via Burial of Cotton Waste Biomaterials" American Society of Agricultural & Biological Engineers Annual International Meeting

39. L. Lower*, S. Park, **W. J. Sagues**. 2025. “Watt a Waste: Utilizing Hurricane Debris with Catalyst Recycling for Lithium-ion Battery Anodes” American Society of Agricultural & Biological Engineers Annual International Meeting
40. J. Cunniffe*, J. Cheng, **W. J. Sagues**. 2025. Techno-Economic Assessment of Atmospheric Carbon Removal via Anaerobic Digestion of Biomass Waste. American Society of Agricultural & Biological Engineers Annual International Meeting
41. E. Woods*, R. Cook, A. Woodley, **W. J. Sagues**. 2025. Alkaline Mineral Residues from Pulp Mills as a Sustainable and Economical Alternative to Lime Fertilizers. American Society of Agricultural & Biological Engineers Annual International Meeting
42. Jose Gonzalez-Aguirre, Shaikat Chandra Dey, **William Joe Sagues**, Zachary Combs, Steven Rowland, Abhijit Dutta, & Sunkyu Park. 2025. “Process Integration and Techno-Economic Analysis of Bio-Graphite and Hydrogen Production from Pyrolysis Bio-Oil with Iron Ore Reduction in the Steelmaking Industry.” American Institute of Chemical Engineers (AIChE) Annual Meeting
43. S. C. Dey, **W. J. Sagues**, S. Park. 2025. “Scalable Transformation of Pyrolysis Oil into Biographite Anode for Lithium-Ion Batteries”. American Institute of Chemical Engineers (AIChE) Annual Meeting
44. **W. J. Sagues.** 2024. “Bio-based battery material for circular energy storage systems”. American Institute of Chemical Engineers (AIChE) Annual Meeting
45. **W. J. Sagues.** 2024. “Flipped Composting of Cotton Textile Waste Materials” Cotton Beltwide Conference
46. M. R. Nimlos, S. M. Rowland, K. Iisa, A. Dutta, S. C. Dey, L. Lower*, **W. J. Sagues**, B. J. Tremolet de Villers, R. K. Bhardwaj, S. S. Kelley, B. Freel, G. Hopkins, T. Vries, T. Vries, M. Regula, Z. A. Combs, S. Park, C. Fagerholm. 2024. “Pyrolysis oil coking: producing high value carbon and renewable fuel” Oral presentation at the TC Biomass: International Conference on Thermochemical Conversion Science: Biomass & Municipal Solid Waste to RNG, Biofuels, & Chemicals.
47. E. Carrejo*, R. Wu, H. Jameel, F. Li, S. Park, **W. J Sagues**. 2024. “Decarbonizing Lime Kilns at Pulp Mills via Electrification.” Oral presentation at the American Chemical Society spring meeting
48. S. C. Dey, L. Lower*, **W. J. Sagues**, B. Tremolet, S. D. Han, M. R. Nimlos, S. S. Kelley, S. Park. 2024. “Low Temperature Processing of Bio-Oil for Graphite Production” Oral presentation at the American Institute of Chemical Engineers (AIChE) Annual Conference
49. **W. J. Sagues**. 2024. “Roads to Removal: A National Assessment of Biomass Carbon Removal & Storage (BiCRS)” Oral presentation at the American Society of Agricultural & Biological Engineers Annual International Meeting
50. L. Lower*, S. Rowland, M. Regula, Z. Combs, S. Park, T. Vries, T. Vries, M. Nimlos, and **W. J. Sagues**. 2024. “Valorizing Polycyclic Aromatic Hydrocarbons from BTX Production: a Pathway for Lithium-Ion Anode Materials and Sustainable Aviation Fuel” Oral and poster presentations at the American Society of Agricultural & Biological Engineers Annual International Meeting
51. V. R. Berrio*, E. Youngsteadt, M. Kirchner, D. Call, N. Crook, S. Salmon, A. Grunden, and **W. J. Sagues**. 2024. “Microbial assimilation of formic acid and C1 casebon metabolism via an ant-derived community” Oral and poster presentations at the American Society of Agricultural & Biological Engineers Annual International Meeting
52. J. Cunniffe*, V. R. Berrio, S. Salmon, A. Grunden, N. Crook, and **W. J. Sagues**. 2024. “Techno-Economic Analysis of Industrial Enzyme Production and Purification” Oral and poster presentations at the American Society of Agricultural & Biological Engineers Annual International Meeting
53. S. M. Rowland, M. R. Nimlos, S. Chandra Dey, L. Lower*, **W. J. Sagues**, B. J. Tremolet de Villers, R. K. Bhardwaj, S. S. Kelley, B. Freel, G. Hopkins, T. Vries, T. Vries, M. Regula, Z. A. Combs, S. Park. 2024. Production of Battery-Grade Graphite from Fast- and Catalytic Fast

Pyrolysis Oils. Production of Battery-Grade Graphite from Renewable Carbon Sources. Oral presentation at the Clearwater Clean Energy Conference

54. V. R. Berrio*, E. Youngsteadt, M. Kirchner, D. Call, N. Crook, S. Salmon, A. Grunden, and **W. J. Sagues**. 2024. "A Microbial Community from Formicine Ants with Potential for Formatotrophy" Oral and poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
55. E. Woods*, **W. J. Sagues**. 2024. "Biomass and Textile Waste Composting Coupled with CO2 Capture." Oral and poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
56. J. Cunniffe*, N. Lavoine, J. Wang, and **W. J. Sagues**. 2024. "Co-Production of a Crystalline Cellulose Material and Biofuels from CRISPR-Edited Biomass." Oral and poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
57. L. M. Lower*, **W. J. Sagues**, R. C. Sartor, J. J. Cheng. 2024. "Thermophilic Anaerobic Co-Digestion of Lemnaceae Biomass and Swine Wastewater for Biogas Production" Oral presentation at the International Water Association's World Conference on Anaerobic Digestion
58. **W. J. Sagues**, J. Cunniffe*, J. Wang, and N. Lavoine. 2023. "Co-production of crystalline cellulose and biofuels from poplar" Oral presentation at NC Department of Agriculture and Consumer Services Research Symposium.
59. E. Carrejo*, H. Jameel, F. Li, R. Wu, S. Park, **W. J. Sagues**. 2023. "Decarbonizing Lime Kilns at Pulp Mills Via Oxy-Fuel Combustion/Electrification" Oral presentation at American Institute of Chemical Engineers (AIChE) 2023 Annual Conference
60. S. C. Dey, L. Lower*, **W. J. Sagues**, B. Tremolet, S. D. Han, M. R. Nimlos, S. S. Kelley, S. Park. 2023. Oral presentation at "Pyrolysis Oil: A Promising Anode Precursor for Lithium-ion Batteries". American Institute of Chemical Engineers (AIChE) 2023 Annual Conference
61. **W. J. Sagues**, E. Woods*, V. R. Berrio, and Y. Qiu. 2023. "Carbon-negative biomaterials via engineered composting with carbon capture" Oral presentation at American Institute of Chemical Engineers (AIChE) 2023 Annual Conference
62. S. C. Dey, T. Vook*, W. J. Sagues, S.D. Han, M. Nimlos, S. S. Kelley, S. Park. 2022. "Catalytic Conversion of Bio-oil into Rechargeable Battery Anode" Oral & poster presentation at the 2022 Frontiers in Biorefining conference
63. S. C. Dey, **W. J. Sagues**, S. Park. 2022. "Iron-Catalyzed Conversion of Bio-Oil into Lithium-Ion Battery Anode." Oral presentation at the 28th North American Catalysis Society
64. T. Vook*, S. D. Han, S. Park, M. Nimlos, & **W. J. Sagues**. 2022. "Catalytic Graphitization of Biomass for Green Battery Anodes" TC Biomass Conference
65. T. Vook*, S. D. Han, S. Park, M. Nimlos, & **W. J. Sagues.** 2021 "Statistical Optimization of Catalytic Graphitization of Paper Towel Waste" American Society of Agricultural & Biological Engineers Annual International Meeting
66. **W. J. Sagues**, M. Yung, H. Jameel, M. Davis, B. Donohoe, M. Nimlos, and S. Park. 2021. "Catalytic Graphitization of Biomass for Green Battery Anodes" Oral presentation at the Institute of Biological Engineering's Annual Conference
67. **W. J. Sagues**, H. Jameel, S. Park, D. L. Sanchez. 2021. "Integrating CO_2 Capture, Utilization, and Storage at Pulp & Paper Mills in the United States" Oral presentation at the Institute of Biological Engineering's Annual Conference
68. **W. J. Sagues**, S. D. Han, S. Park, & M. Nimlos. 2020. "Catalytic Graphitization of Biomass for Green Battery Anodes" 2020 AIChE Bioenergy Conference
69. **W. J. Sagues**, M. Yung, H. Jameel, M. Davis, B. Donohoe, M. Nimlos, and S. Park. 2020. "Catalytic Graphitization of Lignin for Green Battery Anodes" Oral presentation at the Society for Industrial Microbiology and Biotechnology's Symposium on Biomaterials, Fuels, and Chemicals (*Cancelled due to COVID-19)*

70. **W. J. Sagues**, M. Yung, H. Jameel, M. Davis, B. Donohoe, M. Nimlos, and S. Park. 2020. "Catalytic Graphitization of Biomass for Green Battery Anodes" Oral presentation at the Institute of Biological Engineering's Annual Conference (*Cancelled due to COVID-19)*
71. **W. J. Sagues**, H. Jameel, S. Park, D. L. Sanchez. 2020. "Integrating CO_2 Capture, Utilization, and Storage at Pulp & Paper Mills in the United States" Oral presentation at the Institute of Biological Engineering's Annual Conference (*Cancelled due to COVID-19)*
72. **W. J. Sagues**, H. Jameel, S. Park, D. L. Sanchez. 2019. "Enhanced Carbon Dioxide Removal from Coupled Direct Air Capture-Bioenergy Systems" Oral presentation at the Applied Energy Symposium at MIT
73. **W. J. Sagues,** H. Jameel, S. Park. 2019. "Catalytic Graphitization of Lignocellulosic Biomass" Oral presentation at the ACS Annual Green Chemistry & Engineering Conference
74. **W. J. Sagues,** K. McCance, S. L. McAlexander, M. Blanchard, R. Venditti. 2019. "An Interdisciplinary Educational Program to Promote Interest in the Circular Bioeconomy" Oral presentation at the ACS Annual Green Chemistry & Engineering Conference
75. **W. J. Sagues**, Z. Tong. 2017. "Production of Phenolic Monomers and Free Sugars from Sweet Sorghum Bagasse via Fenton Modification & Supercritical Ethanol" Oral presentation at the American Society of Agricultural & Biological Engineers' Annual International Meeting
76. **W. J. Sagues**, Z. Tong. 2017. "A Ferric Catalyzed Process for the Conversion of Agro-Industrial Residues to Phenolic Monomers and Free Sugars" Oral presentation at the Florida Section of American Society of Agricultural & Biological Engineers' Annual Meeting
77. **W. J. Sagues**, Z. Tong. 2016. "Ironing out the kinks: A ferric catalyzed process for selective monomerization of lignin from whole biomass while leaving the cellulosic fraction in high purity" Oral presentation at the Technical Association of the Pulp and Paper Industry's International Bioenergy and Bioproducts Conference
78. **W. J. Sagues**, Z. Tong. 2016. "Overcoming the blend wall: Ethanol as a green solvent for thermochemical conversion of whole biomass into high-value aromatics and purified cellulose" Oral presentation at the American Society of Agricultural & Biological Engineers' Annual International Meeting
79. **W. J. Sagues**, Z. Tong. 2016. "A two-step process for the conversion of sorghum bagasse into monomeric aromatics and purified cellulose" Oral presentation at the Florida Center for Renewable Chemicals & Fuels
80. **W. J. Sagues**, I.U. Nieves, L.O. Ingram. 2014. "Lignocellulosic biorefinery process development and scale-up in the State of Florida" Oral presentation at the American Society of Agricultural and Biological Engineers' Florida Section Annual Conference

Poster Presentations

** indicates graduate or undergraduate student under my advising*

1. V. R. Berrio*, A. Grunden, N. Crook. S. Salom, **W. J. Sagues**. 2025. "Homologous expression of formate dehydrogenase from Methylobacterium extorquens for carbon utilization technologies." American Society of Agricultural & Biological Engineers Annual International Meeting
2. T. Islam*, J. Daystar, R. Venditti, **W. J. Sagues**. 2025. "Atmospheric Carbon Removal via Burial of Cotton Waste Biomaterials" American Society of Agricultural & Biological Engineers Annual International Meeting
3. L. Lower*, S. Park, **W. J. Sagues**. 2025. "Watt a Waste: Utilizing Hurricane Debris with Catalyst Recycling for Lithium-ion Battery Anodes" American Society of Agricultural & Biological Engineers Annual International Meeting
4. J. Cunniffe*, J. Cheng, **W. J. Sagues**. 2025. Techno-Economic Assessment of Atmospheric Carbon Removal via Anaerobic Digestion of Biomass Waste. American Society of Agricultural & Biological Engineers Annual International Meeting

5. E. Woods*, R. Cook, A. Woodley, **W. J. Sagues**. 2025. Alkaline Mineral Residues from Pulp Mills as a Sustainable and Economical Alternative to Lime Fertilizers. American Society of Agricultural & Biological Engineers Annual International Meeting
6. M. S. Reza, N. Garland, A. Ferris, S. Razavi, J. Daystar, R. Venditti, V. Augustyn, F. Li, & **W. J. Sagues**. 2024. "Upcycling Cotton-Polyester Textile Waste into High Surface Area Carbon for Energy Storage Applications" Poster presentation at the TC Biomass: International Conference on Thermochemical Conversion Science: Biomass & Municipal Solid Waste to RNG, Biofuels, & Chemicals
7. L. Lower*, S. Rowland, M. Regula, Z. Combs, S. Park, T. Vries, T. Vries, M. Nimlos, and **W. J. Sagues**. 2024. "Valorizing Polycyclic Aromatic Hydrocarbons from BTX Production: a Pathway for Lithium-Ion Anode Materials and Sustainable Aviation Fuel" Oral and poster presentations at the American Society of Agricultural & Biological Engineers Annual International Meeting
8. V. R. Berrio*, E. Youngsteadt, M. Kirchner, D. Call, N. Crook, S. Salmon, A. Grunden, and **W. J. Sagues**. 2024. "Microbial assimilation of formic acid and C1 casebon metabolism via an ant-derived community" Oral and poster presentations at the American Society of Agricultural & Biological Engineers Annual International Meeting
9. J. Cunniffe*, V. R. Berrio*, S. Salmon, A. Grunden, N. Crook, and **W. J. Sagues**. 2024. "Techno-Economic Analysis of Industrial Enzyme Production and Purification" Oral and poster presentations at the American Society of Agricultural & Biological Engineers Annual International Meeting
10. E. Woods*, **W. J. Sagues**. 2024. "Carbon Dioxide Capture and Methan Emission Reduction in Composting" Poster presentation at the American Society of Agricultural & Biological Engineers Annual International Meeting
11. V. R. Berrio*, E. Youngsteadt, M. Kirchner, D. Call, N. Crook, S. Salmon, A. Grunden, and **W. J. Sagues**. 2024. "A Microbial Community from Formicine Ants with Potential for Formatotrophy" Oral and poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
12. E. Woods*, **W. J. Sagues**. 2024. "Biomass and Textile Waste Composting Coupled with CO2 Capture." Oral and poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
13. J. Cunniffe*, N. Lavoine, J. Wang, and **W. J. Sagues**. 2024. "Co-Production of a Crystalline Cellulose Material and Biofuels from CRISPR-Edited Biomass." Oral and poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
14. E Woods*, **WJ Sagues**. 2023. "Carbon dioxide removal via flipped composting" Poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
15. L Lower*, **WJ Sagues**, J Cheng. 2023. "Thermophilic anaerobic co-digestion of swine waste and lemnaceae for biogas production" Poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
16. J Cunniffe*, N Lavoine, W Yuan, J Wang, **WJ Sagues**. 2023. "Co-production of crystalline cellulose and biofuels from CRISPR-edited biomass" Poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
17. VR Berrio*, **WJ Sagues**, A Grunden, D Call, E Youngsteadt. 2023. "Formate discovery and evolution for CO2 utilization" Poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
18. S. C. Dey, T. Vook*, W. J. Sagues, S.D. Han, M. Nimlos, S. S. Kelley, S. Park. 2022. "Catalytic Conversion of Bio-oil into Rechargeable Battery Anode" Oral & poster presentation at the 2022 Frontiers in Biorefining conference

19. P. Seibert*, V. Rondon Berrio*, D. McKee*, **W. J. Sagues**. 2022. “Biological Conversion of Cotton Residues to Bioplastic & Proteins via Wild Fermentation”. Poster presentation at NCSU’s Undergraduate Research Symposium
20. **W. J. Sagues**, H. Jameel, S. Park, D. L. Sanchez. 2022. “Integrating Biomass Carbon Removal & Storage (BiCRS) in Chemical Pulp Mills” Gordon Research Conference on Carbon Removal
21. **W. J. Sagues**, D. Sanchez, H. Jameel, & S. Park. 2022. “Catalytic Graphitization of Biomass for Green Battery Anodes” 2020 AIChE Bioenergy Conference
22. **W. J. Sagues**, D. Sanchez, H. Jameel, & S. Park. 2022. “Integrating CO_2 Capture, Utilization, & Sequestration at Kraft Pulp Biorefineries” 2020 AIChE Bioenergy Conference
23. **W. J. Sagues**, D. L. Sanchez, H. Jameel, and S. Park. 2020. “Integrating CO_2 Capture, Utilization, & Storage at Pulp & Paper Mills in the United States” Poster presentation at the Society for Industrial Microbiology and Biotechnology’s Symposium on Biomaterials, Fuels, and Chemicals (*Cancelled due to COVID-19)*
24. **W. J. Sagues,** H. Bao, J. Nemenyi, H. Weaver, J. Zeng, Z. Tong. 2017 “Ironing out the kinks: A three-step ferric catalyzed process for monomeric aromatics and free sugars from agro-industrial residues” University of Florida’s Graduate Research Poster Symposium
25. J. Nemenyi, Z. Lai, **W. J. Sagues**, Z. Tong. 2017. “Supercritical Ethanol: The Superhero of Selective Lignin Depolymerization”. Univeristy of Florida’s Undergraduate Research Poster Symposium
26. **W. J. Sagues,** H. Bao, J. Nemenyi, H. Weaver, J. Zeng, Z. Tong. 2016 “Ironing out the kinks: A three-step ferric catalyzed process for monomeric aromatics and free sugars from whole biomass” Technical Association of the Pulp and Paper Industry’s International Bioenergy and Bioproducts Conference
27. **W. J. Sagues**, Z. Tong. 2016. “Ironing out the kinks: A two-step ferric catalyzed process for monomeric aromatics and purified cellulose from whole biomass” Poster presentation at the Society for Industrial Microbiology and Biotechnology’s Symposium on Biotechnology for Fuels and Chemicals
28. **W. J. Sagues**, Z. Tong. 2016. “Overcoming the blend wall: Ethanol as a green solvent for thermochemical conversion of whole biomass into high-value aromatics and purified cellulose” American Society of Agricultural & Biological Engineers’ Annual International Meeting
29. **W. J. Sagues**, I. U. Nieves, K. Gubicza, K. T Shanmugam, Z. Barta, and L. O. Ingram. 2015. “Techno-Economic Analysis of an Advanced Demonstration-Scale Biorefinery” University of Florida’s Graduate Research Symposium
30. **W. J. Sagues,** Z. Tong, H. Weaver, “One-Pot Reaction to Convert Agricultural Waste to Carbon-Negative Hydrocarbon Fuel Precursors” 2015. University of Florida’ Ag. & Bio. Engineering Poster Symposium